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PRODUCT SPECIFICATION

.093 SERIES PLUG AND RECEPTACLE POWER CONNECTORS

1.0 SCOPE

This Product Specification covers the 5.03 mm (.198 inch) centerline connector series using pin and socket terminals terminated with 14 to 24 AWG wire using crimp technology with tin plating.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

PRODUCT NAME	SERIES NUMBER
Plug Housing, 1-circuit	1619-1P
Receptacle Housing, 1-circuit	1619-1R
Plug Housing, 2-circuit	1545-P*
Receptacle Housing, 2-circuit	1545-R*
Plug Housing, 3-circuit	1396-P*
Receptacle Housing, 3-circuit	1396-R*
Plug Housing, 4-circuit (in-line)	1490-P*
Receptacle Housing, 4-circuit (in-line)	1490-R*
Plug Housing, 4-circuit (2 x 2)	2163-P*
Receptacle Housing, 4-circuit (2 x 2)	2163-R*
Plug Housing, 5-circuit	1653-P*
Receptacle Housing, 5-circuit	1653-R*
Plug Housing, 6-circuit	1261-P*
Receptacle Housing, 6-circuit	1261-R*
Plug Housing, 9-circuit	1292-P*
Receptacle Housing, 9-circuit	1292-R*
Plug Housing, 12-circuit	1360-P*
Receptacle Housing, 12-circuit	1360-R*
Socket Terminal, 14-18 AWG	1189
Pin Terminal, 14-18 AWG	1190
Socket Terminal, 18-22 AWG	1380
Pin Terminal, 18-22 AWG	1381
Socket Terminal, 22-24 AWG	2870
Pin Terminal, 22-24 AWG	2871
Socket Terminal, 14-18 AWG, (P-B)	4550
Socket Terminal, 18-22 AWG, (P-B)	2151

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Housings are molded of UL 94V-2 rated PA66.
Terminals are tin-plated brass or phosphor-bronze.
See appropriate sales drawings for additional information on dimensions, materials, platings and markings.

2.3 SAFETY AGENCY APPROVALS

UL File #E29179
CSA File #E29179

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See the appropriate sales drawings for necessary referenced documents and specifications.

4.0 RATINGS

4.1 VOLTAGE

250 Volts AC (RMS)

4.2 CURRENT AND APPLICABLE WIRES

AWG	Circuit Size	Amps
14	3	14
14	9	11
18	3	10
18	9	7
22	3	7
22	9	5

4.3 TEMPERATURE

Operating: - 55°C to + 105°C

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Contact Resistance (Low Level)**	Mate connectors: apply a maximum voltage of **20** mV and a current of **20** mA. (Measurement locations in Section 7.0)	**10** milliohms MAXIMUM [initial]
2	**Dielectric Withstanding Voltage**	Mate connectors: apply a voltage of **2000** VAC for **1** minute between adjacent terminals and between terminals to ground.	No breakdown; current leakage < **500** mA
3	**Temperature Rise (via Current Cycling)**	Mate connectors, measuring the temperature rise at 60 minute intervals during **96** hours of steady state at rated current; followed by **240** hours of current cycling (**45** minutes ON and **15** minutes OFF per hour) with measurements made during last 5 minute period of each ON cycle; followed by **96** hours of steady state at rated current with measurements taken at 60 minute intervals.	Temperature rise: **+30**°C MAXIMUM

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
4	**Connector Mate and Unmate Forces**	Mate and unmate connector (male to female) at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute for a total of 25 cycles. Initial mate forces to be measured. Unmate forces to be measured after 25 cycles.	**15.6** N (**3.5** lbf) MAXIMUM insertion force **4.4** N (**1** lbf) MINIMUM withdrawal force
5	**Terminal Retention Force (in Housing)**	Axial pullout force on the terminal in the housing at a rate of **25 ± 6** mm (**1 ± ¼** inch) per minute.	**89** N (**20** lbf) MINIMUM retention force
6	**Wire Pullout Force (Axial)**	Apply an axial pullout force on the wire at a rate of **25 ± 6** mm (**1 ± ¼** inch).	MINIMUM pullout forces: 14 AWG **178** N (**40** lbf) 16 AWG **156** N (**35** lbf) 18 AWG **133** N (**30** lbf) 20 AWG **89** N (**20** lbf) 22 AWG **62** N (**14** lbf) 24 AWG **36** N (**8** lbf)
7	**Terminal Insertion Force (into Housing)**	Apply an axial insertion force on the terminal at a rate of **25 ± 6** mm (**1 ± ¼** inch).	**22**N (**5** lbf) MAXIMUM insertion force

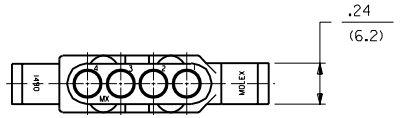
5.3 ENVIRONMENTAL REQUIREMENTS

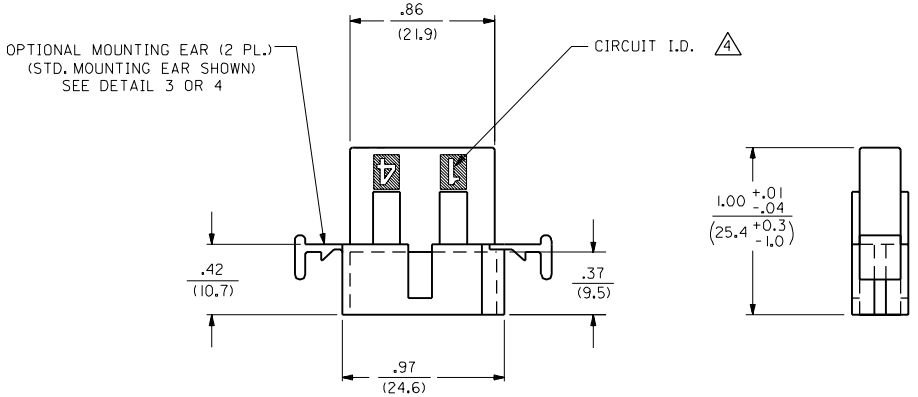
ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
8	**Thermal Cycling**	Mate connectors; expose to temperature cycling between **–25**°C and **70**°C for 500 cycles with a dwell time of 30 minutes at each extreme. Measurements to be taken initially and after every 100 cycles.	**10** milliohms MAXIMUM (change from initial) & Visual: No Damage

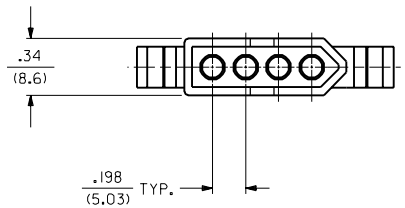
6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage. See the appropriate sales drawings for additional information on packaging requirements.

PLUG







PLUG HOUSING

LTR.	REVISIONS
T	ADD -P1BU VERSION PER ECN #U3 1537 10-21-93 RW
S	REVISE PER ECR U1 1686 GK 8/9/91 RW
R1	ADD EDP'S & REVISE SUFFIXES, ECR U10834 GK 4/24/91 RW
R	REV. LENGTH TOL. ECN. #U1 0685 3-22-91 RW
P	REV. & REDRAWN, ECR U8 1139 GEP 3-8-88 RW

MFG.	SH.	REV.
T	3	T
T	2	T
T	1	T

▽ = 0 ▼ = 0 REVISE ONLY ON CAD SYSTEM

DIMENSIONS SHOWN (METRIC) INCH

UNLESS OTHERWISE SPECIFIED TOLERANCES: ANGULAR ± 1°

	INCH	METRIC
3 PLACE	± .010	---
2 PLACE	± .014	± 0.25
1 PLACE	---	± 0.35

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

TITLE: .093/(2.36) HOUSING, PLUG AND RECEPTACLE, 4 CKT., .198/(5.03) CTRS.

MOLEX INCORPORATED LISLE,ILL. 60532 U.S.A.

SHEET NO. 1 OF 3

DATE 3/ 9/88

PART NO. SEE CHART

DRWG. NO. SD-1490-▪

DRWG. BY	CHK'D. BY	APP'D. BY	SCALE
GEP	RW	RAS	2 : 1

FILE NAME SD1490X1.DGN

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DIV. CP

SIZE C

PLUG		RECEPTACLE	
PART NO.	ENG. NO.	PART NO.	ENG. NO.
03-09-2041	1490-P	03-09-1041	1490-R
03-09-2042	1490-P1	03-09-1042	1490-R1
03-09-7041	1490-PBK	03-09-6041	1490-RBK
03-09-7042	1490-P1BK	03-09-6042	1490-R1BK
PRELIMINARY	1490-P2	03-09-1043	1490-R2
03-09-3042	1490-P1BU	03-09-6043	1490-RBU
		03-09-6045	1490-RGN

LEGEND:

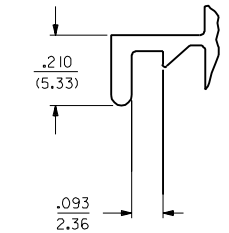
1490-****-*

P = PLUG
R = RECEPTACLE

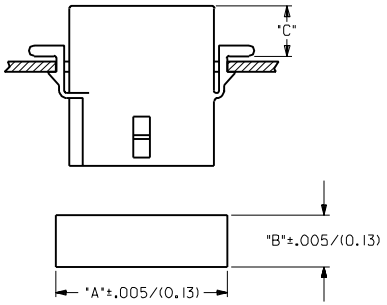
BLANK = WITH STANDARD EARS
1 = WITHOUT EARS
2 = WITH PREBENT EARS, PER DETAIL 4

COLOR: BLANK=NATURAL COLOR
AM=AMBER BK=BLACK BU=BLUE
BN=BROWN GY=GRAY GN=GREEN
OR=ORANGE RD=RED YW=YELLOW

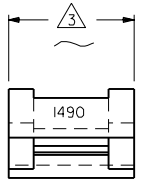
BLANK = MATERIAL CODE A

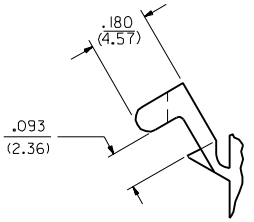


DETAIL 3
.093/(2.36) STANDARD MOUNTING EAR
(SCALE 4:1)



HOUSING	DIM. "A"	DIM. "B"	DIM. "C"
PLUG	1.131/(28.73)	.375/(9.52)	.36/(9.1)
RECEPTACLE	1.038/(26.36)	.312/(7.92)	.37/(9.4)





DETAIL 4
.093/(2.36) PREBENT MOUNTING EAR
(SCALE 4:1)

NOTES:

1. MATERIAL CODES:
   A = NYLON 6/6, 94V-2
2. THIS PART COMPLIES WITH MOLEX PRODUCT SPEC. 02-09.
3. FOR DIMENSION SEE SHEET 1 AND 2.
4. CIRCUIT I.D. NUMBERS ON HOUSING APPEAR ON PARTS FROM TOOLS BUILT AFTER 8/7/91.

LTR.	REVISIONS	LTR.	REVISIONS
		T	SEE SHT. 1
		S	SEE SHT. 1
		R1	SEE SHT. 1
		P	SEE SHT. 1

DIMENSIONS SHOWN (METRIC) INCH
UNLESS OTHERWISE SPECIFIED TOLERANCES: ANGULAR ± 1°

	INCH	METRIC
3 PLACE	± .010	---
2 PLACE	± .014	± 0.25
1 PLACE	---	± 0.35

DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS

DRWG. BY GEP | CHK'D. BY RW
APP'D. BY RAS | SCALE 2 : 1

▽ = 0 ▼ = 0 REVISE ONLY ON CAD SYSTEM

TITLE: .093/(2.36) HOUSINGS, PLUG AND RECEPTACLE, 4 CKT. ø ø 198/(5.03) CTRS.

MOLEX INCORPORATED LISLE,ILL. 60532 U.S.A.
SHEET NO. 3 | DATE 3/10/88

PART NO. SEE CHART
DRWG. NO. SD-1490-*

FILE NAME SD1490X3.DGN

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DIV. CP | SIZE C